



Reliability of the Test of Rehabilitative Outcome (TORO)

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Abstract

The Test of Rehabilitative Outcomes (TORO) was designed to measure the outcome of an aural rehabilitation program focused on development of communication coping strategies. This project was undertaken as a first step in determining the psychometric properties of the TORO. Using a 4-6 week interval, the TORO will be administered to 65 hearing impaired adult veterans on 2 occasions. Test-retest properties of the TORO will be presented.

Introduction

While there are many self-assessment tools available to monitor the outcome of a hearing aid fitting; there are fewer tools designed for post hearing aid fitting aural rehabilitation programs. The Communication Profile for the Hearing Impaired (CPHI) was designed to assess communication problems and outcome of an aural rehabilitation program (1). This 145-item questionnaire has 25 scales that incorporate an environmental, behavioral, emotional and attitudinal component. While this tool is very comprehensive and reliable, it may be too long and time consuming for use in a busy audiology practice. A pilot study in 1994 showed poor test re-test reliability for the CPHI in the CTVHCS population.

During the 15 years that a Coping Strategy Aural Rehabilitation Program has been conducted at the Central Texas Veterans Health Care System, various self-assessment tools have been used to monitor patient progress (HHIE, CPHI, Beck Depression Inventory, and various informal measures). None of these tools have been entirely satisfactory. The pilot study in 1994 showed poor test re-test reliability for the CPHI in the CTVHCS population. Therefore the development of a questionnaire to monitor behavioral and emotional changes was considered necessary.

TORO

The 10-item TORO has 7 behavioral questions and 3 emotional questions. (Appendix) Each question begins with "How often do you...?" Each item finishes that sentence. For example, "How often do you....feel frustrated because of communication problems?" The response is one of the following: Almost never (scored as 10 points), Hardly ever (8), Occasionally (6), Half the time (4), Most of the time (2), Almost always (0). The scoring ranges from 0 to 100. The higher the score the better the individual is coping with the handicap.

(1) Demorest ME, Erdman SA. Retest Stability of the Communication Profile for the Hearing Impaired. Ear and Hear 1988;9:237-242.

Current Study

Subject Criteria:

- ❖ bilateral symmetrical non-fluctuating sloping sensorineural hearing loss
- ❖ thresholds at 1000Hz to 4000Hz no worse than 100dBHL
- ❖ first-time hearing aid users

Method

Veterans at the VAMC in Central Texas completed the self-administered TORO twice in a 4-6 week interval. The first administration was at the initial hearing evaluation and hearing aid selection visit. The second administration was just prior to the hearing aid fitting appointment. Mean time between first and second administration was 31 days. All subjects were first time hearing aid users and had not received aural rehabilitation instruction prior to completing the TORO both times.

Results

Data from 38 subjects has been tabulated and is reported below.

- ❖ The scatter plot shows a positive relationship between the two TORO administrations.
- ❖ Table 1 shows the mean for each question and the total TORO score with a 95% confidence interval for the difference in scores.
- ❖ The correlation coefficient (r =value) for total TORO score is 0.71.

Scatter Plot

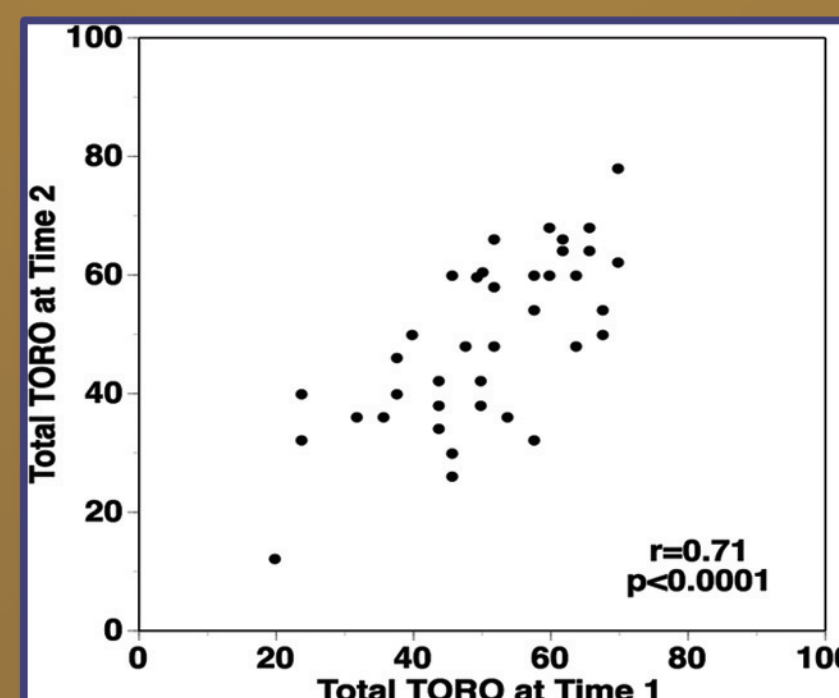


Table 1
TORO Data for each question

Question	Period 1	Period 2	95% CI for Change	Correlation p-value
1	4.6 ± 2.6	4.1 ± 2.4	-0.3 to +1.2	0.56 < 0.001
2	6.1 ± 2.8	6.1 ± 3.1	-2.9 to -0.1	0.33 < 0.05
3	4.1 ± 2.4	4.2 ± 2.3	-0.7 to +0.5	0.71 < 0.0001
4	5.0 ± 3.1	5.5 ± 2.9	-1.4 to +0.4	0.60 < 0.0001
5	6.0 ± 2.6	5.6 ± 2.8	-0.5 to +1.2	0.55 < 0.001
6	5.5 ± 3.4	4.6 ± 3.1	-0.3 to +1.9	0.47 < 0.01
7	5.5 ± 3.0	4.9 ± 2.5	0.0 to +1.3	0.76 < 0.0001
8	3.5 ± 2.8	3.4 ± 2.6	-0.7 to +0.8	0.63 < 0.0001
9	4.8 ± 2.8	4.8 ± 2.5	-0.6 to +0.5	0.78 < 0.0001
10	5.8 ± 2.3	5.4 ± 2.6	-0.4 to +1.4	0.36 < 0.05
Total	50.9 ± 13.1	49.1 ± 14.4	-1.7 to +5.3	0.71 < 0.0001

Discussion

- ❖ There does not appear to be a significant difference in reliability between emotional and behavioral questions.
- ❖ 3 questions have a low correlation value(<5.0). Several patients requested clarification on item 2. The reason for low correlation value for item 6 and 10 is not clear at this time.
- ❖ After the data for all subjects is analyzed, the need for modification for specific items will be considered.
- ❖ A communication partner version will be evaluated in another study.

Appendix Test of Rehabilitative Outcomes

Name _____ Date _____

How often do you . . . ? (Please answer these questions by making a checkmark.)

1. **feel frustrated because of communication problems?**
___Hardly ever ___Occasionally ___Half the time ___Most of the time ___Almost always
2. **talk to someone who is not in the same room with you?**
___Hardly ever ___Occasionally ___Half the time ___Most of the time ___Almost always
3. **have trouble communicating when you go out to eat?**
___Hardly ever ___Occasionally ___Half the time ___Most of the time ___Almost always
4. **avoid a situation because it will be hard to communicate?**
___Hardly ever ___Occasionally ___Half the time ___Most of the time ___Almost always
5. **feel short-tempered because of communication problems?**
___Hardly ever ___Occasionally ___Half the time ___Most of the time ___Almost always
6. **tell people you are hard of hearing if you don't understand what they say?**
___Almost always ___Most of the time ___Half the time ___Occasionally ___Hardly ever
7. **pretend that you understand what someone said?**
___Hardly ever ___Occasionally ___Half the time ___Most of the time ___Almost always
8. **get complaints about your preferred volume on the TV?**
___Hardly ever ___Occasionally ___Half the time ___Most of the time ___Almost always
9. **feel left out of conversations?**
___Hardly ever ___Occasionally ___Half the time ___Most of the time ___Almost always
10. **double-check the accuracy of what you hear?**
___Almost always ___Most of the time ___Half the time ___Occasionally ___Hardly ever